

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

AIR FORCE INSTRUCTION 32-6002

27 MAY 1997



Civil Engineer

**FAMILY HOUSING PLANNING,
PROGRAMMING, DESIGN, AND
CONSTRUCTION**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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SUMMARY OF REVISIONS

This revision incorporates interim change (IC) 97-1 which provides guidance for limits on military family housing non-general officer quarter units with Congressional approval to exceed \$15,000. This modifies AFI 32-6002 to clarify the limit interpretation as approved by SAF/MII. A | indicates revisions from the previous edition.

Chapter 1

PLANNING AND PROGRAMMING

1.1. Purpose. This chapter implements laws, incorporates DoD and Air Force policies, and provides basic guidance unique to family housing planning and programming. For more information about family housing planning and programming, see:

- AFI 32-1021, *Planning and Programming of Facility Construction Projects*.
- AFI 32-1032, *Planning and Programming of Real Property Maintenance Projects*.
- AFI 32-7001, Environmental Budgeting
- AFI 32-7061, Environmental Impact Analysis Process.

1.2. Program Overview:

1.2.1. Acquisition programs include:

- New and replacement construction.
- Domestic lease (including the former section 801 program).
- Foreign lease.
- Rental guarantee (formerly the section 802 program).
- Private-sector financing.
- No-cost acquisition.
- Interservice transfer.

1.2.2. Other programs include:

- Improvement (including minor improvements).
- Maintenance and repair (including minor alterations).
- Restoration or replacement for damaged or destroyed housing.

1.3. General Policy:

1.3.1. Funding Policy:

1.3.1.1. The MAJCOMs and bases use family housing funds to acquire, construct, replace, improve, operate, lease, maintain and repair houses and support facilities. Support facilities include:

- Family housing offices, maintenance facilities, and supply and storage facilities.
- Recreational, athletic and other community support facilities located in family housing areas for the exclusive use of the housing area residents.
- Utility distribution systems and associated protective or control devices including transformers, switch gears, manholes, and hydrants located in family housing areas for the exclusive use of the housing area residents.

1.3.1.2. MAJCOMs and bases use:

- Planning and design funds (P-714) to design projects under the new and replacement construction, and improvement programs.
- Maintenance and repair funds (P-722 funds) to plan and design projects in the maintenance and repair and restoration programs.

1.3.2. Approval Levels. Table 1.1 shows project approval levels and delegation authority.

1.3.3. Housing Requirements Analysis. Bases:

- Must identify surplus housing.
- Must perform a housing market analysis to ensure plans are not made to replace, improve, construct or acquire units the Air Force doesn't need. For instructions, follow the current Air Force Housing Market Analysis Guidance Manual.
- Support projects with housing market analyses that are less than 3 years old.

1.3.4. Housing Community Plan Requirements . Bases with more than 100 housing units must develop a housing community plan to construct, replace, improve, maintain, and repair family housing facilities. These plans must include:

- Floor plan designs for all unit types.
- Projected requirements.
- Plans for land use as defined in the Base Comprehensive Plan.
- Uses for existing housing stock.
- Requirements data based on the most current housing market analysis.

1.3.5. Restrictions on Subsequent Work. Bases should not undertake a replacement, improvement, minor improvement, major maintenance and repair or minor alteration project on a new unit or on a unit improved within 3 years after tenants moved in. **NOTE:** The 3-year limit doesn't apply when a project addresses health, safety, or life-threatening conditions or if the project falls under the auspices of a larger program such as a general energy efficiency upgrade program. In all cases, MAJCOMs must submit a copy of DD Form 1391, **FY 19 Military Construction Program**, to HQ USAF/CEH with full justification for not meeting the 3-year limit.

1.3.6. Alterations To Accommodate Physically Handicapped Family Members. Bases may alter housing units, as required, to accommodate the needs of handicapped family members.

1.3.7. Statutory Space Limit. See table 1.2 for the space limitations on constructing, acquiring, and improving family housing units.

1.3.7.1. Housing units may exceed the maximum net floor areas described in table 1.2 by 10 percent for:

- Officers holding special command positions designated by the Secretary of Defense.
- The commanding officer of a military installation.
- The senior noncommissioned officer of a military installations.

1.3.7.2. SAF/MII must approve any increase up to 5 percent in the maximum net floor area to:

- Award a turnkey contract.
- Purchase, lease, or convert housing units.

1.3.7.3. The total increase allowed by paragraphs 1.3.7.1. and 1.3.7.2. may not exceed 10 percent

1.3.7.4. Housing units may exceed the maximum net floor area by 300 square feet (28 square meters) for indoor activity rooms in family housing units located in harsh climates. Bases in harsh climates are those with more than 7,500 heating degree days annually, as defined in AFM 88-29, *Engineering Weather Data*.

1.3.7.5. *The Air Force Family Housing Guide* gives general guidance for calculating net floor areas.

1.3.8. Security Requirements. Bases may not use family housing funds to install, construct, or maintain security systems.

1.3.9. Environmental Requirements. Refer to AFI 32-7001, *Environmental Budgeting*, for applicable law and general guidance. Bases:

- Must correct all environmental hazards when required by law. Such hazards include:
- Underground storage tanks.
- Asbestos.
- Radon.
- Lead-based paint.
- Any other legislated environmental hazards.
- Must identify requirements and develop plans for correcting hazards. Address these requirements in projects maintaining, repairing, improving or constructing family housing.

1.3.10. Special Requirements for General Officer Quarters. For special policies and guidance for general officer quarters, refer to AFI 32-6003, *General Officer Quarters*. Bases:

- Include projects for upgrading general officer quarters or converting existing quarters to general officer quarters in the annual budget submission to the Congress.
- Should not consider out-of-cycle requests for such improvements unless they meet urgent requirements for safety, health, or security.

1.3.11. Special Requirements for Historic Housing Facilities. Bases:

- Use family housing funds to maintain historic housing units in livable condition.
- Work with the State Historic Preservation Officers to repair or improve units and make a reasonable effort to whole-house improve and preserve its historic significance.
- Consider major upgrading, alternative uses, or disposing of historic housing or support facilities if repair and maintenance costs become excessive.

1.3.12. Surplus and Substandard Housing. Bases:

- Limit work on surplus housing to minor maintenance and repair.
- Dispose of surplus housing when no longer economical to operate.

- Improve or replace substandard housing, if the Air Force still needs it, by FY97.
- Comply with McKinney Act before disposing of any units.

1.3.13. Programming Limit. The number of units proposed in acquisition and construction projects shall not exceed 90 percent of the projected housing deficit.

1.4. New and Replacement Construction Program (P-711 Funds). This program includes projects for acquiring, constructing or replacing existing family housing units, support facilities, or infrastructure.

1.4.1. Housing and Urban Development Verification. Before planning and programming a construction project, the base and MAJCOM must consult the local housing and urban development office to track available assets for alternative housing.

1.4.1.1. If no local housing and urban development assets exist, include housing and urban development verification in the construction program submittal.

1.4.2. The Congress approves all construction projects.

1.4.3. Bases and MAJCOMs submit these forms for approval:

- DD Form 1391, **FY 19 Military Construction Program**, and Tri-Service Cost Model, for new construction projects (see figures 1.1. and 1.2 for sample form)
- DD Form 1391, **FY 19 Military Construction Program**, and Tri-Service Cost Model, for replacement construction projects (see figures 1.3 and 1.4 for sample form).
- DD Form 1523, Military Family Housing Justification, for all acquisition projects (see figure 1.5 for sample form).
- DD Form 1391, **FY 19 Military Construction Program**, and deficiency detail data sheets for support facilities projects (see figures 1.6 and 1.7 for sample form).

1.5. Domestic Lease Program (P-725/6 Funds) (including the former section 801 program).

1.5.1. Authority. Under 10 U.S.C. 2828(a) and 2835, the Air Force may lease family housing units constructed or rehabilitated near a military installation within the United States.

1.5.2. Requirements:

1.5.2.1. Bases must justify leases using a housing market analysis less than 3 years old, and an economic analysis proving the build-to-lease would cost at least 5 percent less than new construction.

1.5.2.2. Bases may use short-term domestic leases as an interim solution for unforeseen housing requirements. Renew short-term leases annually.

1.5.2.3. When bases identify long-term housing requirements, they must develop plans for acquiring facilities or new construction.

1.5.2.4. The Congress sets domestic lease ceilings, annually. Lease ceilings cover utility, maintenance, and operational costs.

1.5.2.5. MAJCOMs and bases:

- Publicly advertise and competitively bid or negotiate domestic build-to-lease contracts.

- Maintain units under a separate contract during the term of the lease.
- Ensure that construction complies with national building codes supplemented by DoD standards.
- Ensure that build-to-lease contracts don't exceed 20 years (not including the construction period) and offer the Government the right of first refusal to acquire the facilities at the end of the lease period.
- Structure build-to-lease contracts so that the Government owns the land option. This keeps the bidding open to all interested developers. NOTE: This procedure doesn't preclude developers from proposing projects for independently owned land.

1.5.2.6. Build-to-lease projects are subject to annual line-item authorization and annual appropriation. They must comply with Office of Management and Budget scoring policy.

1.5.2.7. SAF/MII must notify the Congress of these leases and allow a 21-day waiting period before awarding a contract.

1.6. Foreign Lease Program (P-723/4 Funds):

1.6.1. Authority. Under 10 U.S.C. 2828(c), the Air Force may lease family housing in a foreign country.

1.6.2. Requirements:

1.6.2.1. Bases must validate a housing shortage with a housing market analysis and perform an economic analysis showing that leasing costs less than alternative housing options.

1.6.2.2. Bases may use short-term foreign leases as an interim solution to unforeseen housing requirements. They must renew short-term leases annually.

1.6.2.3. If bases identify a long-term housing requirement, they must develop plans for acquiring or constructing housing.

1.6.2.4. The Congress sets a foreign lease ceiling annually. The lease ceilings cover utility, maintenance, and operational costs.

1.6.2.5. MAJCOMs and bases:

- Publicly advertise and competitively bid or negotiate foreign build-to-lease contracts.
- Ensure that construction complies with local building codes and supplemental DoD specifications.
- Must limit foreign build-to-lease contracts to 10 years.
- Must include a buy-out provision stating the buy-out cost for each year of the lease period.

1.6.2.6. The Congress limits the total number of units leased under this program.

1.7. Rental Guarantee Program (formerly the section 802 program).

1.7.1. Authority. Under 10 U.S.C. 2836, the Air Force may enter into a rental guarantee lease within the United States. This program allows the services to enter into lease agreements guaranteeing tenants will occupy rental housing on or near installations.

1.7.2. Rental guarantee projects are subject to line-item authorization and annual appropriation. SAF/MII must notify the Congress and wait 21 days before awarding a contract.

1.7.3. Rental guarantees must comply with the Office of Management and Budget scoring policy.

1.8. Private Sector Financing Program:

1.8.1. Authority. Under 10 U.S.C. 2667, the Air Force may lease land to developers to design, construct, operate, and maintain privately-owned family housing for rent. Lease agreements between the landlord and Government don't guarantee occupancy. Agreement may include an escalation clause to cover operation and maintenance costs.

1.8.2. Requirements:

1.8.2.1. Housing officers must offer the rental units to all eligible military families before offering them to civilian families.

1.8.2.2. Families occupy those units on a voluntary bases and pay rent directly to the contractor, developer, or owner.

1.8.2.3. The Air Force sets the rental rate target at basic allowance for quarters plus variable housing allowance.

1.9. No-Cost Acquisition Program:

1.9.1. Authority. The Air Force may acquire family housing units at no cost to the Government under 10 U.S.C. 2822. This program doesn't require line-item authorization.

1.9.2. Requirements:

1.9.2.1. Bases may use family housing funds for improving, operating and maintaining housing.

1.9.2.2. SAF/MII must approve no-cost acquisition projects before the installation acquires family housing units.

1.10. Interservice Transfer Program:

1.10.1. This program permits the transfer of family housing between services. The Secretaries of the respective services and Office of the Secretary of Defense (OSD) must approve all transfers.

1.11. Improvement Program (P-713 Funds):

1.11.1. Overview. This program improves existing family housing inventory to meet whole-house and whole-neighborhood standards and covers all required maintenance and repair to extend the life of the house for 25 years. Improvement projects:

- Alter, add, expand, or extend the life of an existing housing facility.
- Upgrade related housing facilities such as family housing offices and housing maintenance facilities.
- Upgrade or construct other community support facilities such as parking areas, utilities, bus shelters and playgrounds.

1.11.2. Statutory Improvement Cost Limit. The Congress sets the statutory unit-cost limit for housing improvements and concurrent maintenance and repair. The Congress sets the current limit at:

- \$50,000, multiplied by the area cost factor, per housing unit at the time of the contract award.

- \$60,000, multiplied by the area cost factor, per housing unit for improvements necessary to make the unit suitable for a handicapped person.

1.11.2.1. In foreign locations, bases may not apply the area cost factor to increase the cost limit.

NOTE: Cost increases after contract award resulting solely from varying foreign currency exchange rates don't constitute a violation of this limit. **EXCEPTION:** This limit doesn't apply to:

- Projects authorized for restoring or replacing damaged or destroyed housing units.
- Projects maintaining and repairing facilities or making minor alterations.

1.11.2.2. HQ USAF/CEH issues a call letter to MAJCOMs every year to prepare the *Budget Estimate Submission*. MAJCOMs identify those improvement projects where the costs of the most expensive unit exceeds the statutory improvement cost limit. Projects are included in the annual President's Budget for approval by the Congress.

1.11.2.3. To request a waiver, bases must perform an economic analysis in accordance with the latest *Air Force Housing Economic Analysis Guidance Manual* and show improving the facility is more cost effective than other alternatives.

1.11.2.4. SAF/MII may waive the cost limit by notifying the Congress with an economic analysis submission and wait for a 21-day period.

1.11.3. Substituting Improvement Projects with Replacement Projects . If an authorized improvement project's cost exceeds 70 percent of the cost to replace the housing and an economic analysis further shows the improvement project no longer is the most cost effective alternative, bases may substitute a replacement project at the improvement project program amount.

1.11.3.1. SAF/MII must approve project substitutions, notify the Congress, and wait 21 days before the contract can be awarded. The notification includes the economic analysis and revised DD Form 1391.

1.11.4. Programming Improvement Projects:

1.11.4.1. Bases must program improvement projects to whole-house and whole-neighborhood criteria, even if the projected costs exceed the statutory improvement cost limit. If projected costs exceed the limit, bases must perform an economic analysis to determine whether to program the project under the improvement program or the construction (replacement) program.

1.11.4.2. Bases plan improvements and all necessary maintenance and repair work as well as minor alterations that will bring units up to whole-house standards. Improvement projects must comply with the base's housing community plan.

1.11.4.3. Bases plan minor improvement projects for low-cost, small-scale projects to improve existing housing facilities or housing community areas to include concurrent maintenance or repair work.

1.11.4.4. Minor improvement projects must not exceed the improvement cost limit. In calculating the statutory improvement cost limit, include the total cost of all improvement, major maintenance and repair, and minor alteration work planned or accomplished during the current fiscal year.

1.11.5. Out-of-Cycle Improvement Projects:

1.11.5.1. MAJCOMs may apply to HQ USAF/CEH for approval of urgent, out-of-cycle requirements that address safety, health, or other life-threatening issues.

1.11.5.2. SAF/MII must approve requests for out-of-cycle improvements contingent upon the availability of funds. Out-of-cycle improvement projects may not exceed the improvement cost limit.

1.11.6. Improvement project approval levels are listed in table 1.1.

1.11.7. See figure 1.8 for a sample of DD Form 1391, **FY 19 Military Construction Program**, for improvement projects.

1.12. Maintenance and Repair Program (P-722 Funds):

1.12.1. Overview. This program covers major and minor maintenance and repair (see Section B - Glossary of Terms) required to preserve family housing units and support facilities. It also covers general officers quarters and non-general officers quarters maintenance and repair thresholds, and minor alterations required in conjunction with maintenance and repair.

1.12.2. Minor Alterations. Construction type work normally performed in support of a maintenance and repair project.

1.12.2.1. Minor alteration projects:

- Can improve housing units, support facilities, and streets (including sidewalks), and utility systems.
- Are funded with P-722 funds.
- Have approval limits listed in table 1.1.

1.12.2.2. Bases can't use minor alteration authority on housing units to:

- Increase the size of a unit.
- Increase the number of rooms in a unit.
- Add air conditioning.
- Add or alter exterior appurtenances such as garages, carports, driveways, storage sheds, detached facilities, patios, sprinkler systems, fences, decks, or porches.

1.12.2.3. Bases will use the improvement program (P-713 funds) to add an appurtenance, unless overriding justification exists. **EXCEPTION:** Occupants may use family housing maintenance and repair (P-722 funds) to add patios, decks, and fences under the family housing self-help program.

1.12.2.4. Bases that add exterior appurtenances under the self-help program for senior or general officer quarters must report work to SAF/MII through MAJCOMs and HQ USAF/CEH at the end of September. This annual report must justify the work.

1.12.2.5. Bases must not use P-722 funds for minor alterations on non-dwelling units to:

- Increase the size of any facility.
- Add new exterior appurtenances.

- Extend streets.
- Construct new parking areas, carports or garages.
- Increase the capacity of utility systems.
- Expand recreation facilities.

1.12.2.6. MAJCOMs and bases track the cost and scope of work for minor alterations to ensure they don't exceed the per-unit and per-project thresholds (see table 1.1) and they haven't violated any restrictions.

1.12.3. Congressional Notification for Exceeding the General Officers Quarters and Non-General Officers Quarters Maintenance and Repair Thresholds:

1.12.3.1. The general officers quarters maintenance and repair threshold, set at \$25,000:

- Places an annual obligation limit on total costs for maintaining, repairing, and making minor alterations on all general officer quarters .
- Excludes costs for design and contract claims.

1.12.3.2. The non-general officers quarters maintenance and repair threshold, set at \$15,000:

- Places an annual obligation limit on major maintenance and repair and alteration work, accomplished by job order, work order, or contract, on all non-general officers quarters units.
- Excludes costs for design and contract claims.

1.12.3.3. HQ USAF/ILEH issues a call letter to MAJCOMs every year to prepare the Budget Estimate Submission. MAJCOMs identify those maintenance and repair projects where general officers quarters and non-general officers quarters maintenance and repair thresholds are to be exceeded. Projects are included in the annual President's Budget for approval by the Congress. Bases:

- Must execute all work approved over the non-general officers quarters maintenance and repair threshold no later than 1 year following the program year.
- May not exceed the maintenance and repair thresholds until the Congress has approved.
- Can increase the per-unit cost threshold for all non-general officer quarters in a project by up to 25 percent of the high unit cost, but the total project cost cannot exceed 25 percent of the approved project cost threshold.
- Can reduce the non-general officer quarters project scope by up to 25 percent of the project previously notified to Congress. However, the project scope cannot be reduced when costs are increased above per-unit and/or project cost thresholds.
- May not exceed the non-general officer quarters 25 percent flexibility without prior congressional approval.

1.12.4. Out-of-Cycle Notification To Exceed General Officers Quarters or Non- General Officers Quarters Maintenance and Repair Thresholds:

1.12.4.1. MAJCOMs may apply to HQ USAF/CEH for consideration of urgent maintenance and repair requirements. In supporting documentation, MAJCOMs must include DD Form 1391 and explain:

- Why they didn't identify the requirement for budget submission.
- The requirement's urgency.
- The impact of a delay.

1.12.4.2. SAF/MII must approve out-of-cycle projects exceeding general officers quarters and non-general officers quarters maintenance and repair thresholds, and submit to the Congress for approval.

1.12.4.3. The Congress limits submission of out-of-cycle maintenance and repair projects exceeding the general officers quarters maintenance and repair threshold to once per year.

1.12.5. Unforeseen Environmental Hazard Remediation Costs:

1.12.5.1. Costs to correct unforeseen environmental hazards such as removing asbestos, mitigating radon, removing and abating lead-based paint, and correcting other known legislated environmental hazards in an ongoing contract may exceed maintenance and repair thresholds. MAJCOMs must notify HQ USAF/CEH at the end of March and September each year listing each instance where maintenance and repair thresholds were exceeded because of unforeseen environmental hazard remediation. Include information about work scope and break out costs.

1.12.5.2. SAF/MII notifies the Congress after-the-fact semiannually.

1.12.6. Self-Help Work. Bases may not violate approval authority levels, statutory space, improvement cost limits, or general officers quarters and non-general officers quarters maintenance and repair thresholds when programming family housing self-help work.

1.12.7. See table 1.1 for approval levels.

1.12.8. See figure 1.9 for sample DD Form 1391, **FY 19 Military Construction Program**, maintenance and repair project.

1.13. Restoration or Replacement for Damaged or Destroyed Housing Program (P-711/P-713/P-722 Funds):

1.13.1. Overview. This program provides funds for restoring, or replacing family housing units damaged by fire, hurricanes, earthquakes, storms, or other disasters. Bases:

- Use P-722 funds for immediate temporary repairs to make units livable.
- Program permanent repairs, as quickly as possible, using either P-722 or P-713 funds. Program replacement facility projects using P-711 funds.
- Include all known maintenance, repair, and improvement requirements resulting from unforeseen events.
- Notify MAJCOMs and HQ USAF/CEH. SAF/MII notifies the Congress, after the fact, when restoring damaged or destroyed housing units or when performing emergency work, exceeding general officers quarters or non-general officers quarters maintenance and repair thresholds.
- Identify the per-unit cost to restore each unit in multi-family structures and include this figure in the cost estimate.

1.13.1.1. The statutory limit on improvement costs (P-713 funds) doesn't apply to damaged or destroyed facilities.

1.13.1.2. The approval authority, as delegated in table 1.1, must determine the need for repair or replacement due to damage caused by unforeseen events and not from long-term deterioration.

1.13.1.3. MAJCOMs submit to HQ USAF/CEH any per unit restoration costs that exceed 70 percent of replacement costs or \$100,000, whichever is less; or any changes to the programmed amount for a previously approved project that exceeds the 70 percent or \$100,000 threshold. Identify the total extent of damage and other projects programmed to restore damaged or destroyed units. SAF/MII approves projects that exceed 70 percent of the replacement costs or \$100,000 per unit.

1.13.1.4. See table 1.1 for approval levels.

1.13.1.5. See figure 1.10 for sample DD Form 1391, **FY 19 Military Construction Program, Restoration Projects**

Table 1.1. Project Approval Levels & Delegation Authority.

| TYPE OF WORK | FUND TYPE | MAJCOM | SAF AND AF | MAJCOM DELEGATION AUTHORITY |
|--------------------|-----------|--|---|---|
| MAINTENANCE&REPAIR | P-722 | <u>Non-General Officer Quarter:</u> \$15,000 (1) per unit per year and less than 50% replacement cost, unlimited per project. <u>General Officer Quarter:</u> \$25,000 (1) per unit per year and less than 50% replacement cost, unlimited per project | In excess of 50% but less than 70% replacement cost | Cost not to exceed \$1,000,000 per project (not below Deputy Base Civil Engineer) |
| MINOR ALTERATIONS | P-722 | <u>Dwelling Unit:</u> \$3,000 (2) per unit per year, \$200,000 per project. <u>Support Facilities:</u> \$5,000 per maintenance and repair project. <u>Streets and Utilities:</u> \$25,000 per maintenance and repair project. | Project or unit cost exceeding MAJCOM limits | Lowest practical level |
| IMPROVEMENTS | P-713 | (3) | Not to exceed statutory cost and space limits | (3) |

| | | | | |
|--------------------|-------------------|--|---|---|
| MINOR IMPROVEMENTS | P-713 | Dwelling Unit: \$200,000 per project , not to exceed statutory cost and space limits, except Senior officer quarter and general officer quarter projects. <u>Non-Dwelling Unit</u> : \$10,000 per project. | AF/CE: Senior Officer Quarter project SAF/MII: General Officer Quarter project | (3) |
| RESTORATION | P-711/P-713/P-722 | Less than 70% replacement cost or \$100,000 per unit whichever is less | Greater than 70% replacement cost or \$100,000 per unit | Less than 70% replacement cost or \$100,000 per unit whichever is less (Not below Installation Commander) |
| CONSTRUCTION | P-711 | 3 | (3) | (3) |

Table 1.2. Statutory Space Limit.

| L | A | B | C | D |
|----|-------------------------------------|----------------------------------|--|--|
| I | Military Pay Grade | Maximum Number of Bedrooms | Maximum Net Floor Area (Square Feet) | Maximum Net Floor Area (Square Meters) |
| N | | | | |
| E | | | | |
| 1 | 0-7 and above | 4 | 2,100 | 195 |
| 2 | 0-6 | | 1,700 | 158 |
| 3 | 0-4 and 0-5 | | 1,550 | 144 |
| 4 | | 3 | 1,400 | 130 |
| 5 | 0-1 through 0-3, E-7 through E-9 | 5 | 1,550 | 144 |
| 6 | | 4 | 1,450 | 135 |
| 7 | | 3 | 1,350 | 125 |
| 8 | | 2 | 950 | 88 |
| 9 | E-1 through E-6 | 5 | 1,550 | 144 |
| 10 | | 4 | 1,350 | 125 |
| 11 | | 3 | 1,200 | 111 |
| 12 | | 2 | 950 | 88 |

Figure 1.1. Sample DD Form 1391, New Construction Project.

| | | | | | | |
|---|-----|---|--|---|------------------|----------------------------------|
| 1. COMPONENT AIR FORCE | | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE | |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, SOMEWHERE | | | | 4. PROJECT TITLE MILITARY FAMILY HOUSING (PHASE I) | | |
| 5. PROGRAM ELEMENT 8.87.41 | | 6. CATEGORY CODE 711-142 | | 7. PROJECT NUMBER XXXXX880001 | | 8. PROJECT COST (\$000) 3.262 |
| 9. COST ESTIMATES | | | | | | |
| ITEM | | U/M | QUANTITY | UNIT COST | COST (\$000) | |
| FAMILY HOUSING | | | | | | |
| MILITARY FAMILY HOUSING | | UN | 34 | 76,588 | 2,640 | |
| SOLAR SPACE | | LS | | | (2,604) | |
| SUPPORTING FACILITIES | | | | | (36) | |
| SITE PREPARATION | | LS | | | 305 | |
| ROADS AND PAVINGS | | LS | | | (50) | |
| UTILITIES | | LS | | | (100) | |
| LANDSCAPING | | LS | | | (95) | |
| RECREATION | | LS | | | (35) | |
| SUBTOTAL | | LS | | | (25) | |
| CONTINGENCY (5%) | | | | | 2,945 | |
| TOTAL CONTRACT COST | | | | | 147 | |
| SUPERVISION, INSPECTION AND OVERHEAD (5.5%) | | | | | 3,092 | |
| TOTAL REQUEST | | | | | 170 | |
| AREA COST FACTOR 1.05 | | | | | 3,262 | |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION: | | | | | | |
| Construct 34 single and multiplex family housing units with all necessary amenities and supporting facilities. Project includes site preparation, attached single car garages, air conditioning, energy conserving solar features, parking, exterior patios and privacy fencing, support infrastructure of roads, and utilities, neighborhood playgrounds, recreation areas, and all landscaping. | | | | | | |
| <u>UNIT TYPE</u> | | <u>NET AREA</u> | <u>PROJECTS/FACTORS</u> | <u>\$/NSF</u> | <u>NO. UNITS</u> | <u>TOTAL COST</u> |
| JRENL | 2BR | 950 | 1.08 | 57 | 3 | 175,446 |
| JRENL | 3BR | 1200 | 1.08 | 57 | 2 | 147,744 |
| JNCO | 3BR | 950 | 1.08 | 57 | 13 | 175,446 |
| JNCO | 2BR | 1200 | 1.08 | 57 | 10 | 738,720 |
| JNCO | 3BR | 1350 | 1.08 | 57 | 4 | 332,424 |
| SNCO | 3BR | 1350 | 1.08 | 57 | 6 | 498,636 |
| SNCO | 4BR | 1450 | 1.08 | 57 | 4 | 357,048 |
| CGO | 3BR | 1350 | 1.08 | 57 | 1 | 83,106 |
| FGO | 4BR | 1550 | 1.08 | 57 | 1 | 95,418 |
| | | | | | 34 | 2,603,988 |
| 11. REQUIREMENT: 1,000 UN ADEQUATE: 750 UN SUBSTANDARD: 50 UN | | | | | | |
| PROJECT: Military Family Housing. (Current Mission) | | | | | | |
| REQUIREMENT: This project is required to provide modern and efficient housing for military members and their dependents stationed at Blue AFB. All units will meet modern housing standards and are programmed in accordance with the Housing Community Plan, phase xx. The housing will provide a safe, comfortable, and appealing living environment comparable to the off-base civilian community. The design will provide a modern kitchen, living room, family room, bedroom and bath configuration, with ample interior and exterior storage. The number of bedrooms will | | | | | | |
| DD Form 1391, DEC 76 | | | PREVIOUS EDITIONS MAY BE USED INTERNALLY UNTIL EXHAUSTED | | | PAGE NO. |

| | | |
|--|---|----------------------------------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE. SOMEWHERE | | |
| 4. PROJECT TITLE MILITARY FAMILY HOUSING (PHASE 1) | | 5. PROJECT NUMBER XXXXX880001 |

range from two or four, as identified in the most recent housing requirements survey. Units will be provided with a single car garage and exterior parking for a second vehicle. Space will also be provided for visitor parking. The housing area will be provided with an adequate support infrastructure of roads and utilities. The base currently has 800 housing units versus a validated requirement for 1000. This is the first phase of a multi-phase initiative to construct an additional 200 housing units for the base.

CURRENT SITUATION: The most recent Housing Market Analysis for the base shows a deficit of 200 housing units over and above adequate or affordable housing available in the local community. The shortage of suitable housing forces many military families to occupy substandard housing thus affecting family morale, or forcing member to occupy housing at rents outside the acceptable range, causing unacceptable financial hardships as other portions of limited budgets are used to offset high housing costs.

IMPACT IF NOT PROVIDED: There are no alternatives to living in substandard or expensive housing if families desire to avoid lengthy and costly (both financially and psychologically) "voluntary" separations. The impact will be major morale and/or financial problems for the affected families.

ADDITIONAL: (PI 26) This project meets the criteria/scope specified in Part II of Military Handbook 1190, "Facility Planning and Design Guide". (PI 23, modified as necessary) An economic analysis has been prepared comparing the alternatives of new construction, acquisition, and status quo operation. The local school authority indicates a capability exists to accept the increase in the student population generated by this project. No additional school construction will be required.

Figure 1.2. Sample Tri-Service Family Housing Cost Model (New Construction).

| | |
|--|--|
| SERVICE <u>AIR FORCE</u> | LOCATION <u>BLUE AIR FORCE BASE, SOMEWHERE</u> |
| BASELINE: | |
| (34) (1244) (57) | = <u>\$2,411,099</u> |
| (No. Units) (ANSF) (\$/NSF) | = 5' Line Cost |
| PROJECT FACTORS: | |
| (1.05) (1.05) (0.98) | = <u>108</u> |
| (area cost factor) (Project Size) (Unit Size) = | Project Factor |
| HOUSING COST: | |
| (2,411,099) (1.08) | = <u>\$2,603,987</u> |
| (5' Line Cost) (Project Factor) | = <u>Housing Cost</u> |
| (1,000) (1.05) (34) | = <u>\$35,700</u> |
| (Solar Unit Cost) (area cost factor) (Units) | = <u>Total Project Solar Cost</u> |
| ([2,603,987] + [35,700]) / (34) | = <u>\$77,638</u> |
| ([Housing Cost] + [Solar]) / (No. Units) | = <u>Average Unit Cost</u> |
| SUPPORTING COST: | |
| MANAGEMENT OFFICE | |
| MAINTENANCE FACILITY | <u>0</u> |
| SITE PREPARATION | <u>50,000</u> |
| ROADS AND PAVING | <u>100,000</u> |
| UTILITIES | <u>95,000</u> |
| LANDSCAPING | <u>35,000</u> |
| RECREATION | <u>25,000</u> |
| SPECIAL CONSTRUCTION FEATURES | <u>0</u> |
| OTHER (SPECIFY) | <u>0</u> |
| Support Cost | <u>305,000</u> |
| SUMMARY: | |
| (2,603,987) + (35,700) + (305,000) = | <u>\$2,944,687</u> |
| (Housing Cost) + (Solar Cost) + (Support Cost) = | <u>Subtotal</u> |
| (2,944,687) (1.050) (1.055) = <u>\$3,261,976</u> Say: | <u>\$3,262,000</u> |
| (Subtotal) (Contingency) (SIOH) = Project Cost | (Round) |
| (3,262,000) / (34) (1244) (1.05) = | <u>\$73</u> |
| (Project Cost) / (# of Units) (ANSF) (area cost factor) = | Total Project Cost/SF |
| <hr/> | |
| <u>PROJECT SIZE FACTOR - (# OF UNITS)</u> | <u>UNIT SIZE - (AVG NET SF)</u> |
| 1 to 4 = 1.15 100 to 199 = 1.00 | 600 to 749 = .05 1051.to.1150 = 0.99 |
| 5 to 19 = 1.10 200 to 299 = 0.98 | 750 to 849 = 1.03 1151 to 1250 = 0.98 |
| 20 to 49 = 1.05 300 to 499 = 0.96 | 850 to 949 = 1.01 1251 to 1350 = 0.97 |
| 50 to 99 = 1.02 500+ = 0.95 | 950-1050 = 1.00 1351+ = 0.96 |

Figure 1.3. Sample Replacement Construction Project.

| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------------------|---|--------------|------------|----------|------------------|---------|-------|------------|-----------|------|------|----|---|---------|----------|-----|------|----|---|---------|----------|------|------|----|----|---------|----------|------|------|----|----|---------|---------|------|------|----|---|---------|---------|------|------|----|---|---------|--|--|--|--|----|-----------|
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, ELSEWHERE | | | 4. PROJECT TITLE REPLACE MILITARY FAMILY HOUSING (PHASE 2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. PROGRAM ELEMENT 8.87-41 | 6. CATEGORY CODE 711-142 | 7. PROJECT NUMBER XXXX960001 | 8. PROJECT COST (\$000) 3,478 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. COST ESTIMATES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FAMILY HOUSING | | | | 2,635 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REPLACE MILITARY FAMILY HOUSING | UN | 35 | 74,282 | (2,600) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SOLAR SPACE | LS | | | (35) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUPPORTING FACILITIES | | | | 505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SITE PREPARATION | LS | | | (50) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ROADS AND PAVINGS | LS | | | (100) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UTILITIES | LS | | | (95) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LANDSCAPING | LS | | | (35) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RECREATION | LS | | | (25) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DEMOLITION & ASBESTOS/LEAD REMOVAL | LS | | | (200) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUBTOTAL | | | | 3,140 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONTINGENCY (5%) | | | | 157 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL CONTRACT COST | | | | 3,297 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUPERVISION, INSPECTION AND OVERHEAD (5.5%) | | | | 181 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL REQUEST | | | | 3,478 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AREA COST FACTOR .99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION: Replace 35 housing units. Includes demolition, site clearing, replacement/upgrade of utility systems and roads, and construction of new single and multiplex units. Provides normal amenities to include parking, air conditioning, exterior patios and privacy fencing, neighborhood playgrounds, and recreation areas. Includes demolition, asbestos and lead-based paint removal. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">UNIT TYPE</th> <th style="text-align: center;">NET AREA</th> <th style="text-align: center;">PROJECTS/FACTORS</th> <th style="text-align: center;">NO. NSF</th> <th style="text-align: center;">UNITS</th> <th style="text-align: right;">TOTAL COST</th> </tr> <tr> <td>JRENL 3BR</td> <td style="text-align: center;">1200</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">5</td> <td style="text-align: right;">345,420</td> </tr> <tr> <td>JNCO 2BR</td> <td style="text-align: center;">950</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">3</td> <td style="text-align: right;">164,075</td> </tr> <tr> <td>JNCO 3BR</td> <td style="text-align: center;">1200</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">14</td> <td style="text-align: right;">967,176</td> </tr> <tr> <td>SNCO 4BR</td> <td style="text-align: center;">1450</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">10</td> <td style="text-align: right;">834,765</td> </tr> <tr> <td>CGO 3BR</td> <td style="text-align: center;">1350</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">2</td> <td style="text-align: right;">155,439</td> </tr> <tr> <td>GOQ 4BR</td> <td style="text-align: center;">3210</td> <td style="text-align: center;">1.01</td> <td style="text-align: center;">57</td> <td style="text-align: center;">1</td> <td style="text-align: right;">132,987</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">35</td> <td style="text-align: right;">2,599,862</td> </tr> </table> | | | | | UNIT TYPE | NET AREA | PROJECTS/FACTORS | NO. NSF | UNITS | TOTAL COST | JRENL 3BR | 1200 | 1.01 | 57 | 5 | 345,420 | JNCO 2BR | 950 | 1.01 | 57 | 3 | 164,075 | JNCO 3BR | 1200 | 1.01 | 57 | 14 | 967,176 | SNCO 4BR | 1450 | 1.01 | 57 | 10 | 834,765 | CGO 3BR | 1350 | 1.01 | 57 | 2 | 155,439 | GOQ 4BR | 3210 | 1.01 | 57 | 1 | 132,987 | | | | | 35 | 2,599,862 |
| UNIT TYPE | NET AREA | PROJECTS/FACTORS | NO. NSF | UNITS | TOTAL COST | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JRENL 3BR | 1200 | 1.01 | 57 | 5 | 345,420 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JNCO 2BR | 950 | 1.01 | 57 | 3 | 164,075 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JNCO 3BR | 1200 | 1.01 | 57 | 14 | 967,176 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNCO 4BR | 1450 | 1.01 | 57 | 10 | 834,765 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CGO 3BR | 1350 | 1.01 | 57 | 2 | 155,439 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GOQ 4BR | 3210 | 1.01 | 57 | 1 | 132,987 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 35 | 2,599,862 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. REQUIREMENT: 1,000 UN ADEQUATE: 600 UN SUBSTANDARD: 400 UN PROJECT: Replace Military Family Housing (Phase 2). Project includes replacement of one General Officers Quarters.(Current Mission) REQUIREMENT: This project is required to provide modern and efficient replacement housing for military members and their dependents stationed at Blue AFB. All units will meet "whole house" standards and are programmed in accordance with the Housing Community Plan, phase xx. Replacement housing will provide a safe, comfortable, and appealing living environment comparable to the off-base civilian community. This is the second of multiple phases to | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DD Form 1391, DEC 76
PREVIOUS EDITIONS MAY BE USED INTERNALLY UNTIL EXHAUSTED
PAGE NO.

1-3

| | | | |
|--|--|---------------------------------|---------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, ELSEWHERE | | | |
| 4. PROJECT TITLE REPLACE MILITARY FAMILY HOUSING (PHASE 2) | | 5. PROJECT NUMBER XXXX960001 | |
| <p>provide adequate housing for base personnel. Of the 500 housing units to be replaced in this multi-phase initiative, 100 are completed or included in prior programs, and 365 will follow in subsequent phases. The replacement housing will provide a modern kitchen, living room, family room, bedroom and bath configuration, with ample interior and exterior storage and a single car garage. Exterior parking will be provided for a second occupant vehicle and guests. The basic neighborhood support infrastructure will be upgraded to meet modern housing needs. Neighborhood enhancements will include landscaping, playgrounds, and recreation areas.</p> <p>CURRENT SITUATION: This project replaces 35 housing units which were constructed in 1948. These 48-year-old houses are showing the effects of age and continuous heavy use. They have had no major upgrades since construction, and do not meet the needs of today's families, nor do they provide a modern home environment. Roofs, walls, foundations and exterior pavements require major repair or replacement owing to the effects of age and the environment. Roof structures show signs of rot; leaks have made already inadequate (by today's standards) insulation even less effective. Foundation and pavements are showing signs of failure owing to settlement. Plumbing and electrical systems are antiquated and do not meet current standards for efficiency or safety. Housing interiors are generally inadequate by any modern criteria. Bedrooms are small and lack adequate closet space. Bathrooms are small, and fixtures are outdated and energy inefficient. Kitchens have inadequate storage and counterspace, cabinets are old and countertops and sinks are badly worn. Flooring throughout the house is outdated, and contains evidence of asbestos. Plumbing and electrical systems are outdated and do not meet modern building codes. There is no Ground Fault Interrupter Circuit protection and many electrical outlets lack grounding protection. Lighting systems throughout the houses are inefficient and require replacement. Heating and air conditioning systems require upgrade and replacement. PAINT A "PICTURE" of the condition of the existing houses.</p> <p>IMPACT IF NOT PROVIDED: Major morale problems will result if this replacement initiative is not supported. Some people will continue to occupy substandard housing while neighbors and friends are in new, replaced units. The housing will continue to be occupied until it becomes totally uninhabitable because adequate, affordable off-base housing is not available. The current Housing Market Analysis shows an on-base housing deficit of xxx units. Without this and subsequent phases of this initiative, costly piecemeal repairs will continue with no improvement in the living quality.</p> <p>ADDITIONAL: (PI 26) This project meets the criteria/scope specified in Part II of Military Handbook 1190, "Facility Planning and Design Guide". (PI 23) An economic analysis has been prepared comparing the alternatives of new construction, improvement, and status quo operation. Based on the net present values and benefit of the respective alternatives, new construction was found to be the most cost effective over the life of the project. Since this is replacement housing, there will be no increase in the student population or impact on the ability of the local school district to support base dependents.</p> | | | |

Figure 1.4. Sample Tri-Service Family Housing Cost Model (Replacement Construction).

SERVICE AIR FORCE

LOCATION BLUE AIR FORCE BASE, SOMEWHERE

BASELINE:

(34) (1290) (57)

=

\$2,574,119

(No. Units) (ANSF) (\$/NSF)

=

5' Line Cost

PROJECT FACTORS:

(0.99) (1.05) (0.97)

=

1.01

(area cost factor) (Project Size) (Unit Size)

=

Project Factor

HOUSING COST:

(2,574,119) (1.01)

=

\$2,599,861

(5' Line Cost) (Project Factor)

=

Housing Cost

(1,000) (0.99) (35)

=

\$34,650

(Solar Unit Cost) (area cost factor) (Units)

=

Total Project Solar Cost

([2,599,861] + [34,650]) / (35)

=

\$75,272

((Housing Cost) + (Solar)) / (No. Units)

=

Average Unit Cost

SUPPORTING COST:

MANAGEMENT OFFICE

MAINTENANCE FACILITY

0

SITE PREPARATION

50,000

ROADS AND PAVING

100,000

UTILITIES

95,000

LANDSCAPING

35,000

RECREATION

25,000

SPECIAL CONSTRUCTION FEATURES

0

OTHER (SPECIFY)

200,000

Support Cost

505,000

SUMMARY:

(2,599,861) + (34,650) + (505,000)

=

\$3,139,511

(Housing Cost) + (Solar Cost) + (Support Cost)

=

Subtotal

(2,944,687) (1.050) (1.055)

=

\$3,477,793 Say:

(Subtotal) (Contingency) (SIOH)

=

Project Cost

(3,478,000) / (35) (1290) (0.99)

=

\$78

(Project Cost) / (# of Units) (ANSF) (area cost factor)

=

Total Project Cost/SF

| PROJECT SIZE FACTOR - (# OF UNITS) | | | | UNIT SIZE - (AVG NET SF) | | | |
|------------------------------------|------------|---|------|--------------------------|--------------|---|------|
| 1 to 4 = 1.15 | 100 to 199 | = | 1.00 | 600 to 749 = .05 | 1051 to 1150 | = | 0.99 |
| 5 to 19 = 1.10 | 200 to 299 | = | 0.98 | 750 to 849 = 1.03 | 1151 to 1250 | = | 0.98 |
| 20 to 49 = 1.05 | 300 to 499 | = | 0.96 | 850 to 949 = 1.01 | 1251 to 1350 | = | 0.97 |
| 50 to 99 = 1.02 | 500+ | = | 0.95 | 950 to 1050 = 1.00 | 1351+ | = | 0.96 |

Figure 1.5. Sample DD Form 1523, Military Family Housing Justification.

| MILITARY FAMILY HOUSING JUSTIFICATION | | | | 1. DATE OF REPORT (YYMMDD) | 2. FISCAL YEAR 1986 | REPORT CONTROL SYMBOL DD-A&L (AR) 1716 | | | |
|---|----------------|---|----------------|-------------------------------|------------------------|---|----------------|--------------|--|
| 3. DOD COMPONENT AIR FORCE | | 4. REPORTING INSTALLATION a. NAME BLUE AIR FORCE BASE | | | | b. LOCATION TEN MILES SOUTHEAST OF BLUE CITY, SOMEWHERE | | | |
| 5. DATA AS OF 31 JANUARY 1994 | | | | | | | | | |
| ANALYSIS OF REQUIREMENTS AND ASSETS | CURRENT | | | | PROJECTED | | | | |
| | OFFICER (a) | E9 - E4 (b) | E3 - E1 (c) | TOTAL (c) | OFFICER (a) | E9 - E4 (b) | E3 - E1 (c) | TOTAL (c) | |
| 6. TOTAL PERSONNEL STRENGTH | 10 | 94 | 32 | 136 | 9 | 96 | 34 | 139 | |
| 7. PERMANENT PARTY PERSONNEL | 10 | 94 | 32 | 136 | 9 | 96 | 34 | 139 | |
| 8. GROSS FAMILY HOUSING REQUIREMENTS | 10 | 66 | 18 | 94 | 7 | 64 | 20 | 91 | |
| 9. TOTAL UNACCEPTABLY HOUSED (a + b + c) | | | | | | | | | |
| a. INVOLUNTARILY SEPARATED | | | | | | | | | |
| b. IN MILITARY HOUSING TO BE DISPOSED/REPLACED | | | | | | | | | |
| c. UNACCEPTABLY HOUSED - IN COMMUNITY | | | | | | | | | |
| 10. VOLUNTARY SEPARATIONS | 4 | 2 | | 6 | | 2 | | 2 | |
| 11. EFFECTIVE HOUSING REQUIREMENTS | 6 | 64 | 18 | 88 | 7 | 62 | 20 | 89 | |
| 12. HOUSING ASSETS (a + b) | 2 | 20 | 4 | 26 | 2 | 18 | 4 | 24 | |
| a. UNDER MILITARY CONTROL | | | | | | | | | |
| (1) Housed in Existing DoD Owned/Controlled | | | | | | | | | |
| (2) Under Contract/Approved | | | | | | | | | |
| (3) Vacant | | | | | | | | | |
| (4) Inactive | | | | | | | | | |
| b. PRIVATE HOUSING | 2 | 20 | 4 | 26 | 2 | 18 | 4 | 24 | |
| (1) Acceptably Housed | 2 | 20 | 4 | 26 | | | | | |
| (2) Acceptable Vacant Rental | | | | | | | | | |
| 13. EFFECTIVE HOUSING DEFICIT | 2 | 29 | 8 | 39 | 3 | 29 | 11 | 43 | |
| 14. PROPOSED PROJECT | | | | | 2 | 27 | 5 | 34 | |
| 15. REMARKS (Specify item number) | | | | | | | | | |

DD Form 1523, NOV 90 (EG)

Previous editions are obsolete.

Designed using Perform Pro, WHS/DIOR, Apr 97

Figure 1.6. Sample DD Form 1391, Support Facilities Project.

| | | | | |
|--|---|-------------------------------------|--|--------------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, NOWHERE | | | 4. PROJECT TITLE FAMILY HOUSING MANAGEMENT FACILITY | |
| 5. PROGRAM ELEMENT 8.87.41 | 6. CATEGORY CODE 610-119 | 7. PROJECT NUMBER XRMM971993 | 8. PROJECT COST (\$000) 569 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| FAMILY HOUSING MANAGEMENT FACILITY | SF | 4,500 | 85 | 383 |
| SUPPORTING FACILITIES | | | | 130 |
| SITE IMPROVEMENTS | LS | | | (25) |
| UTILITIES | LS | | | (25) |
| PAVEMENTS | LS | | | (50) |
| LANDSCAPING | LS | | | (10) |
| DEMOLITION | LS | | | (5) |
| PREWIRED WORKSTATIONS | LS | | | (15) |
| SUBTOTAL | | | | 513 |
| CONTINGENCY (5%) | | | | 26 |
| TOTAL CONTRACT COST | | | | 539 |
| SUPERVISION, INSPECTION AND OVERHEAD (5.5%) | | | | 30 |
| TOTAL REQUEST | | | | 569 |
| AREA COST FACTOR | 1.05 | | | |
| <p>10. DESCRIPTION OF PROPOSED CONSTRUCTION:</p> <p>All site preparation, drainage improvements, concrete slab foundation, brick veneer exterior surfaces over concrete block, with decorative interior finishings. Project provides offices, restrooms, counseling and meeting rooms, customer waiting area, computer equipment room, and interior and exterior child play areas. Includes all utilities, parking, landscaping and irrigation system. Air conditioning: 5 Tons</p> <p>11. REQUIREMENT: 5,000 SF ADEQUATE: 0 SUBSTANDARD: 3,500 SF</p> <p>PROJECT: Family Housing Management Facility (Current Mission)</p> <p>REQUIREMENT: An adequate facility is required for managing base owned/operated family housing assets, for assisting all arriving personnel in finding adequate on or off base housing, and for managing furnishings for authorized base personnel. The facility must be located for convenient access by arriving personnel and those ready assigned to base housing. It must be handicapped accessible and have adequate parking for vehicles pulling trailers, and small trucks which may be used by arriving personnel. The facility must provide office space, a conference room, private counseling rooms, administrative space, a reception and customer waiting area, a customer referral area with multiple telephones, a computer room and storage space for equipment and publications, a kitchen area for use by families, and interior and exterior play areas for children of customers. Exterior play areas must be provided with recreation equipment and be fenced for security. The facility exterior requires landscaping to enhance customer appeal.</p> <p>CURRENT SITUATION: PROVIDE A GOOD "WORD PICTURE" OF EXISTING CONDITIONS AND PROBLEMS. EXAMPLE: The current Housing Management function is located in a wood frame structure constructed as an open-bay, central latrine barracks in 1948. The facility has had little work done in the intervening 45 years to make it an adequate administrative facility. The facility does not have adequate space to accommodate housing management functions and furnishings management responsibilities. The results is an extremely crowded housing management office with some office functions dispersed in other buildings. The poor facility presents a very unfavorable impression</p> | | | | |

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| | | | |
|---|--|---------------------------------|---------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, NOWHERE | | | |
| 4. PROJECT TITLE FAMILY HOUSING MANAGEMENT FACILITY | | 5. PROJECT NUMBER XRMM971993 | |
| <p>and "welcome" to the thousands of customers who transit the facility each year. Facility layout are inadequate. The facility is located in the industrial portion of the base and is not convenient to users. The small building does not have the layout or space to provide necessary customer support. Counseling rooms are inadequate resulting in customer delays. Existing space affords little privacy to families in counseling. There is no interior play area for children to use while parents are being counseled on housing on housing opportunities requirements. Lack of storage space results in open storage of supplies and equipment in office and customer areas. Heating and air conditioning systems are unreliable and do not adequately support the facility. Age, and the environment have taken their toll on the structure. Floors are uneven, plumbing and electrical systems do not meet modern codes, and walls and ceilings are stained from water leakage. The facility will be demolished upon completion of this replacement project.</p> <p><u>IMPACT IF NOT PROVIDED:</u> Unusual and costly resource commitment will be necessary to keep the existing facility habitable. Major repair or improvements are not an option due to the age and condition of the facility and extensive investment required. Customers will continue to be served in the best possible fashion, albeit in an extremely cramped, deteriorated and unprofessional environment. Management and operations of housing functions will continue from multiple facilities which detracts from effectiveness of personnel and available for customers support.</p> <p><u>ADDITIONAL:</u> This project meets the criteria/scope specified in Part II of Military Handbook 1190, "Facility Planning and Design Guide".</p> | | | |

Figure 1.7. Sample Deficiency Detail Data (DDD) - Support Facilities Project.

| | | |
|--|---|--|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, EVERYWHERE | | |
| 4. PROJECT TITLE FAMILY HOUSING MANAGEMENT FACILITY | | 5. PROJECT NUMBER XRMM971993 |

Existing Facilities Deficiency Detail Data Sheet (EFDDDS)

1. Requirements and Assets:

- (1) Scope of Request: Construct 6,400 SF
- (2) Mission: One B-3 SQ with associated training functions; 2 KC-14 SQ; Two AFRES F-99 SQ; Survival Training for Aircrews. Base military population is 14,998.
- (3) Requirement: (Show specific source of requirement or how scope was derived.) Total base requirement in the category code is xx,xxx SF per xxxxxxxxxxxxxx. AFI 32-8004 (formerly AFR 86-2) AND HQ XXX definitive specify xxx SF for a base supporting over x,xxx housing units.
- (4) Functional Breakout of Proposed Project Scope:
 - a. Self-help storedisplay area 1,000 SF
 - b. Warehouse 3,000 SF
 - c. Office 2 PN 400 SF
 - d. Maintenance Shops 2,000 SF
 - 6,400 SF**
- (5) Requirements/Assets:

| | <u>SE</u> | <u>No. of Bldgs</u> |
|------------------------------|-----------|---------------------|
| a. Total requirement | 6,500 | 2 |
| b. Existing substandard | 2,900 | 3 |
| c. Existing adequate | 0 | - |
| d. Funded, not in inventory | 100 | 1 |
| e. Adequate assets (c + d) | 100 | 1 |
| f. Included in prior program | 0 | - |
| g. Deficiency (a-e-f) | 6,400 | 1 |

2. Facility Summary: Category Code 219-944

| <u>Nonmenclature</u> | <u>Bldg Nmr</u> | <u>Scope Used / Total</u> | <u>Yr/Code/Const</u> | <u>Remarks</u> |
|--|-----------------|---------------------------|----------------------|-------------------|
| EXISTING SUBSTANDARD: | | | | |
| Fam Hsg Maint | 408 | 1,000/1,000 | 48 3 Wood | Demo this project |
| Fam Hsg Stor | 842 | 1,000/1,000 | 57 3 Metal | Demo this project |
| FH Mnt Office | 418 | 900/20,000 | 89 3* Mason | See Note |
| Note - Occupies portion of larger BCE Admin Facility. Space will revert to BCE admin functions (separate EFDDDS attached). | | | | |
| * Real Property records show CC 1 for this facility. It is CC 3 for the FH Maint function due to location. | | | | |
| ADEQUATE: | | | | |
| FH Flam Stor | 415 | 100/100 | 93 1 Mason | Under Const |
| DEFICIENCY: | | | | |
| FH Maint/Stor | 416 | 9,400/9,400 | - - Mason | This Project |

Figure 1.8. Sample DD Form 1391, Improvement Project.

| | | | | |
|--|---|----------------------------------|--|--------------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, EVERYWHERE | | | 4. PROJECT TITLE IMPROVE FAMILY HOUSING (PHASE 3) | |
| 5. PROGRAM ELEMENT 8.87.42 | 6. CATEGORY CODE 711-111 | 7. PROJECT NUMBER XXXXX880002 | 8. PROJECT COST (\$000) 6.995 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| IMPROVE FAMILY HOUSING (PHASE 3) | UN | 100 | 56.000 | 56,000 |
| SUPPORTING FACILITIES | | | | 830 |
| PAVEMENTS | SY | 10.000 | 3 | (50) |
| UTILITIES | LS | | | (450) |
| LANDSCAPING | LS | | | (200) |
| RECREATION FACILITIES | LS | | | (50) |
| ASBESTOS/LEAD-BASED PAINT ABATEMENT | LS | | | (100) |
| SUBTOTAL | | | | 6,430 |
| CONTINGENCY (5%) | | | | 322 |
| TOTAL CONTRACT COST | | | | 6,752 |
| SUPERVISION, INSPECTION AND OVERHEAD (3%) | | | | 203 |
| TOTAL REQUEST | | | | 6,955 |
| MOST EXPENSIVE UNIT | \$75,000 | | | |
| AREA COST FACTOR | 1.05 | | | |
| <p>10. DESCRIPTION OF PROPOSED CONSTRUCTION:</p> <p>Provides general interior and exterior modernization and renovation of housing units. Includes utility upgrade and additions to meet current standards. Upgrades kitchens, bathrooms and floor coverings, improves floor plans, provides increased energy efficiency, privacy fencing, patios, playgrounds and recreation areas. Includes demolition and asbestos/Lead-Based Paint removal.</p> <p>11. REQUIREMENT: 1,000 UN ADEQUATE: 700 UN SUBSTANDARD: 300 UN</p> <p>PROJECT: Improve Military Family Housing (Phase 3). This phase includes work on one General Officer Quarters (Current Mission)</p> <p>REQUIREMENT: This project is required to provide modern and efficient housing for military members and their dependents stationed at Blue AFB. The housing must be upgraded to meet current life safety codes and to provide a comfortable and appealing living environment comparable to the off-base civilian community. This is the third of multiple phases to upgrade 500 houses. Two hundred units have been upgraded or are approved in previous phases, and 200 remain to be accomplished in subsequent phases. All units will meet "whole house" standards and are programmed in accordance with the Housing Community Plan, phase xx. Renovated housing will provide a modern kitchen, living room, family room, bedroom and bath configuration, with ample interior and exterior storage. Living units will be expanded to meet current space authorizations. Single car garages and off street parking will be provided where deficient. Neighborhood improvements are required and will include landscaping, playgrounds and recreation areas.</p> <p>CURRENT SITUATION: This project upgrades and modernizes housing which was constructed in 19xx. These xx year old houses require major renovation and repair to correct deterioration resulting from age and heavy use. They have had no major upgrades since construction, and do not meet the needs of today's families, nor do they provide a modern home environment. Kitchen and bathroom cabinets and fixtures are obsolete and deteriorated. Counter tops are warped, stained, and separating at the seams. Plumbing and lighting fixtures are deteriorated and dated. The electrical</p> | | | | |

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| | | | |
|--|--|---------------------------------|---------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, EVERYWHERE | | | |
| 4. PROJECT TITLE IMPROVE FAMILY HOUSING (PHASE 3) | | 5. PROJECT NUMBER XXXX880002 | |
| <p>systems do not meet modern construction codes. Ground Fault Circuit Interrupter protection is not provided for bathrooms, kitchens, and exterior circuits. Flooring is stained, loose, and mismatched due to non availability of original materials for replacement. Windows, siding, and insulation require replacement. The units have inadequate living space and storage, and no patio or backyard privacy. Landscaping and recreation areas for housing residents are deficient. Pavements areas need renovation.</p> <p><u>IMPACT IF NOT PROVIDED:</u> Units will continue to deteriorate rapidly, resulting in increasing operations, maintenance and repair costs to the Government and inconvenience to residents. Without this project repair of these units will continue in a costly, piecemeal fashion with little or no improvement in living quality. Low morale and retention can be expected if such conditions are permitted to continue. Suitable, affordable off-base housing is not available. The most recent Housing Market Analysis shows an on-base housing deficit of xxx units.</p> <p><u>WORK ACCOMPLISHED IN PREVIOUS THREE YEARS:</u> None.</p> <p><u>WORK PROGRAMMED FOR NEXT THREE YEARS:</u> None.</p> <p><u>ADDITIONAL:</u> An economic analysis has been prepared comparing the alternatives of new construction, improvement, and status quo operation. Based on the net present values and benefits of the respective alternatives, improvement was found to be the most cost effective over the life of the project. The cost to improve this housing is xx% of the replacement cost.</p> | | | |
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Figure 1.9. Sample Maintenance & Repair Project.

| | | | | |
|--|---|---|--|--------------|
| 1. COMPONENT AIR FORCE | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, NEW HAMPSHIRE | | | 4. PROJECT TITLE REPLACE KITCHEN CABINETS AND COUNTERTOPS | |
| 5. PROGRAM ELEMENT 8.87.46 | 6. CATEGORY CODE 711-111 | 7. PROJECT NUMBER XXXX880004 | 8. PROJECT COST (\$000) 3.033 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| REPLACE KITCHEN CABINETS AND COUNTERTOPS | LS | | | 2.805 |
| PHASE I (FY96) | UN | 200 | 2.600 | (520) |
| PHASE II (FY97) | UN | 300 | 2.800 | (840) |
| PHASE III (FY98) | UN | 250 | 3.100 | (775) |
| PHASE IV (FY99) | UN | 150 | 3.400 | (510) |
| MINOR ALTERATIONS | UN | 200 | 800 | (160) |
| SUBTOTAL | | | | 2.805 |
| CONTINGENCY (5%) | | | | 140 |
| TOTAL CONTRACT COST | | | | 2.945 |
| SUPERVISION, INSPECTION AND OVERHEAD (3%) | | | | 88 |
| TOTAL REQUEST | | | | 3.033 |
| AREA COST FACTOR | 1.00 | | | |
| <p>10. DESCRIPTION OF PROPOSED CONSTRUCTION</p> <p>Replace existing counter tops and metal cabinets with new laminated plastic counter tops and wood cabinets in 900 Capehart units. Replace sinks. Reroute plumbing under sinks. Paint and patch walls and ceilings. Reconfigure the kitchen layout for 200 units.</p> <p>11. REQUIREMENT: 1 600 UN ADEQUATE: 700 UN SUBSTANDARD: 900 UN</p> <p>PROJECT: Provides for replacement of deteriorated kitchen counter tops, cabinets, plumbing, and installation of dishwashers and disposers.</p> <p>REQUIREMENT: Project is required to provide adequate kitchen facilities and prevent damage to interior walls and cabinets due to frozen pipes.</p> <p>CURRENT SITUATION: This kitchen cabinets and counter tops were installed during the original construction of these units 23 years ago and have deteriorated beyond repair. A unit by unit survey reveals that the metal kitchen cabinets are stained, warped, dented, and do not close properly. The counter tops are peeled, scratched and chipped. The existing piping is located in the exterior walls and is subject to freezing in sub-zero temperatures, resulting in leaks and water damage to the cabinets and walls, and great inconvenience to the occupants. One third of the units experience freeze damage every winter. All but 200 units had dishwashers and disposals installed in the 1970's. These units are scheduled for accomplishment in the first phase so that the dishwashers and disposers may be installed in conjunction with replacement of the cabinets.</p> <p>ADDITIONAL: These units are not scheduled for major repair or improvement work in the future. Occupants have identified the kitchen cabinets and counter tops as their only major dissatisfaction with these units. The cost to repair these units is xx% of the replacement costs.</p> | | | | |
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Figure 1.10. Sample Restoration Project.

| | | | | | |
|--|-----------------------------|--|--|-------------------------------|--|
| 1. COMPONENT AIR FORCE | | FY 1996 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE | |
| 3. INSTALLATION AND LOCATION BLUE AIR FORCE BASE, CALIFORNIA | | | 4. PROJECT TITLE RESTORATION OF FIRE DAMAGE | | |
| 5. PROGRAM ELEMENT 8.87.42 | 6. CATEGORY CODE 711-111 | 7. PROJECT NUMBER XXXX880005 | | 8. PROJECT COST (\$000) 65 | |
| 9. COST ESTIMATES | | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) | |
| RESTORATION OF FIRE DAMAGE | LS | | | 60 | |
| RESTORATION | LS | | | (45) | |
| IMPROVEMENT | LS | | | (15) | |
| SUBTOTAL | | | | 60 | |
| CONTINGENCY (5%) | | | | 3 | |
| TOTAL CONTRACT COST | | | | 63 | |
| SUPERVISION, INSPECTION AND OVERHEAD (3%) | | | | 2 | |
| TOTAL REQUEST | | | | 65 | |
| AREA COST FACTOR | 1.20 | | | | |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION: | | | | | |
| Remove debris; provide chemical or mechanical deodorization; reconstruct portions of roof, wall and floor areas, replace burned electrical and heat systems, paint interior. Reconfigure kitchen area and provide landscape. Facility number 1003. | | | | | |
| 11. REQUIREMENT: 1,200 UN ADEQUATE: 900 UN SUBSTANDARD: 300 UN | | | | | |
| <p>PROJECT: Provides for restoration of a 3-bedroom company grade Capehart unit which was damaged by fire.</p> <p>REQUIREMENT: Project is required to restore the unit to a livable condition. The unit will remain vacant until the repairs are accomplished.</p> <p>CURRENT SITUATION: This unit was damaged by fire on 17 October 1996. The furnace heat stack was disconnected, causing wood framing above the furnace fire box to ignite. A survey has since been made to determine if there are similar furnace stacks that need to be reconnected or replaced.</p> <p>ADDITIONAL: The current occupancy rate at Blue AFB is 98.9 percent. There are a total of 250 families on the waiting list, with 7 families waiting for this type of unit. The average waiting time is 4 to 6 months. The estimated replacement cost for this type of unit is \$108,000. This project represents 60 percent of the replacement cost of an individual unit. An economic analysis has been performed comparing the alternatives of new construction and repair. Based on the net present values and benefits of the respective alternatives, repair was found to be the most cost effective over the life of the project. No personnel injuries were suffered. A smoke detector was present and did activate. The occupants were not held liable for the damage.</p> | | | | | |
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Chapter 2

DESIGN CRITERIA

2.1. Design Standards. Family housing designs must follow statutory limitations, concepts in the housing community plan, and the *Air Force Family Housing Guide* regardless of the funding source. Design and construction must also conform to local, national, and federal building codes.

2.2. Whole-Neighborhood Design Criteria. Bases develop whole-neighborhood designs to improve family housing neighborhoods by:

- Improving homes using whole-house revitalization guidelines.
- Creating a sense of neighborhood identity for each family.
- Ensuring that the housing area meets the needs of its occupants.
- Making the housing area attractive and a source of pride.

2.3. Whole-House Design Criteria. Bases develop whole-house designs to enhance functional layout, systems, and equipment in housing units and support facilities. The design work updates an existing house to current construction codes and contemporary quality living standards, and extends the useful life of the housing unit 25 years. Whole-house designs typically include:

- Adding and altering space.
- Upgrading mechanical, electrical, and utilities systems.
- Adding energy conservation features.
- Repairing building structure, components and equipment
- Improving yards, walks and driveways.

2.3.1. Requirements. The *Air Force Family Housing Guide* details requirements for whole-house design. It addresses:

- Functional layout and basic amenities.
- Minimum floor areas.
- Room dimensions.
- Energy criteria.
- Environmental issues.

2.3.2. Handicapped Criteria. The *Air Force Family Housing Guide*, *Uniform Federal Accessibility Standards* and *DoD Military Handbook 1190* provide handicapped design criteria for family housing. Each base insure 5 percent of its family housing inventory is handicap adaptable.

2.3.3. Fire-Safety Criteria. The *Air Force Family Housing Guide*, *DoD Military Handbook 1190* and *Military Handbook 1035* outline the requirements for installing fire sprinkler systems, smoke detectors, and kitchen range hoods.

2.3.4. Environmental Remediation Criteria. The *Air Force Family Housing Guide* provides guidance for:

- Handling and removing asbestos containing materials.
- Preventing the entry of radon gas.
- Assessing, managing, and abating lead-based paint in all housing.

2.3.5. Energy Design Criteria. MAJCOMs consider using renewable forms of energy in all family housing projects. See the *Air Force Family Housing Guide* for the procedures and strategies for energy conservation.

2.3.5.1. MAJCOMs and bases use energy conservation methods and cost effective techniques to design new and replacement construction and improvement projects. Use:

- Renewable energy sources (particularly passive or active solar energy systems).
- High efficiency equipment, lighting, and appliances with appropriate controls.
- Increased insulation in floors, walls, ceilings and roofs.
- Radiant barriers.
- Energy efficient windows and doors with insulated or Low-E glass and panels, double or triple glazing, thermal breaks, and weather-stripping.
- Air lock entries on exterior doors where winter temperatures drop to -10 degrees Fahrenheit (-23 degrees Celsius) or lower.
- Window shading to reduce interior overheating caused by solar gain.

2.3.6. Prohibited Materials, Finishes and Equipment. The *Air Force Family Housing Guide* lists prohibited building materials, finishes, and equipment based on considerations such as maintenance, fire safety, environmental restrictions, and energy efficiency.

2.3.7. Electrical and Mechanical Design Criteria. Design agents follow the *Air Force Family Housing Guide* and applicable codes to determine the electrical and mechanical design requirements.

2.3.8. Sound Attenuation. Family housing improvement and construction must provide minimum noise level reduction of 20 percent.

2.3.8.1. MAJCOMs must review the Air Installation Compatible Use Zone report for each project to ensure that adequate sound attenuation is incorporated into the design of family housing units.

2.4. Housing Support Facilities. MAJCOMs follow the guidelines in the *Housing Support Facilities Design Guide* to plan and design housing management offices, housing maintenance facilities and storage warehouses.

Chapter 3

DESIGN MANAGEMENT AND PROJECT EXECUTION

3.1. Project Execution. MAJCOMs and bases, for each new construction, improvement and major maintenance and repair project:

- Must comply with the housing community plan.
- Develop whole-house and whole-neighborhood projects together.

3.1.1. When HQ USAF/CEH issues a 100 percent design instruction, architect-engineers begin the design phase. The design phase ends when a construction contract is awarded.

3.1.1.1. The design manager:

- Selects architect-engineers according to AFI 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*, Chapter 3.
- Designs to satisfy project requirements and deliver the highest quality project within the program's budget.
- Awards architect-engineer contracts by October of the programmed FY minus 2 years.
- Completes designs by June of the programmed FY minus 1 year.
- Completes the Environmental Impact Analysis Process by October of the programmed FY minus 2 years.
- Awards construction contracts 1 month after Air Force receives annual appropriation.

3.1.1.2. MAJCOMs may convert an improvement project to a replacement construction project during the design phase (see paragraph 1.11.3).

3.2. Project Delivery Methods. The traditional design-bid-build delivery method requires an invitation for bid while the non-traditional, turnkey and design-build delivery methods require a request for proposal.

3.2.1. HQ USAF/CE must approve use of turnkey and design-build, delivery methods for all family housing projects.

3.2.2. See AFR 70-30, *Streamlined Source Selection Procedures*, for procedures and guidance for procuring turnkey family housing projects.

3.3. Design Funds:

3.3.1. HQ USAF/CEH issues bulk design (P-714) funds to the MAJCOMs each year.

3.3.2. MAJCOMs manage design funds and keep track of design costs for each project.

3.3.2.1. Use design (P-714) funds for:

- Paying architect-engineer services and installation level in-house costs when investigating project sites.
- Preparing contract drawings and specifications, request for proposals and housing community plans.

3.3.2.2. Use family housing maintenance and repair (P-722) funds, not design (P-714) funds, for:

- Feasibility studies.
- Economic and market analyses.
- Preparing as-built drawings and alternative site studies.
- Preparing environmental impact assessments and statements or developing and justifying construction project requirements, not project specific.
- Design of maintenance and repair projects.
- Administrative or management costs during the source selection process for turnkey or design-build projects.

3.3.3. MAJCOMs and bases must use housing community plan design concepts to develop the final technical design of the construction project or the request for proposal.

3.3.4. 10 U.S.C., 2807 requires the Air Force notify the Congress 21 calendar days before obligation of funds for architect-engineer design contracts over \$300,000. Title 10 U.S.C. 9540 (b) limits to 6 percent of the programmed amount the portion of the architect-engineer fee for producing plans and specifications for a family housing project.

3.4. Programming, Design, and Construction Execution Reporting:

3.4.1. MAJCOMs report to HQ USAF/CEH the design and construction status of all family housing projects through programming, design and construction in a timely manner.

3.4.2. The MAJCOM reviews, validates, and updates programming, design and construction.

3.4.3. HQ USAF/CEH:

- Uses programming, design and construction data to oversee the Air Force family housing program.
- Issues authority to advertise when project design is reported 100 percent in programming, design and construction.
- Issues construction funds based on a validated programming, design and construction bid reports from the MAJCOMs.

3.4.4. For definitions of programming, design and construction design status, see Construction Technical Letter 90-2.

3.5. Design Authority:

3.5.1. HQ USAF/CEH:

- Issues a 100 percent design instructions on all family housing projects by 30 June of each FY.
- Delegates 3 percent design authority to MAJCOMs.

3.5.2. MAJCOMs use the 3 percent standing design authority to negotiate architect-engineer design contracts for family housing projects.

Chapter 4

CONSTRUCTION MANAGEMENT

4.1. Construction Management. Construction agents prepare a comprehensive management plan to define roles and responsibilities for all agents in the construction management process. The plan also provides a mechanism for resolving conflicts and serves as a tool for managing and controlling schedules.

4.2. Cost Control. MAJCOMs:

- Must avoid reprogramming projects if at all possible.
- Submit a cost control management plan to HQ USAF/CEH when a project exceeds 115 percent of programmed amount.

4.3. Cost / Scope Variation and Reprogramming:

4.3.1. HQ USAF/CEH reprograms in accordance with 10 U.S.C. 2853, family housing projects when unforeseen conditions arise during construction.

4.3.2. MAJCOM Civil Engineers submit a written justification for reprogramming that includes:

- Current working estimates based on validated bids or proposals, including bid extensions.
- Economic analysis, if required, to justify an upward adjustment of high unit cost.
- Impact of terminating the contract.
- Revised DD Form 1391.
- Justification for reprogramming.

4.3.3. HQ USAF/CEH approves cost increases less than 25 percent of programmed amount or less than \$2,000,000, whichever is less.

4.3.4. The Congress approves:

- Cost increases greater than 25 percent of programmed amount or greater than \$2,000,000.
- Any scope increase or reduction greater than 25 percent.

4.3.5. SAF/MII approves scope increase or reduction 25 percent or less.

4.3.6. The Air Force must notify the Congress in a cost variation package when scope reduction results in costs that exceed the high cost unit.

4.3.7. MAJCOMs and bases may exclude costs associated with unforeseen legislated environmental hazard remediation such as removing asbestos, mitigating radon, or abating or removing lead-based paint from reprogramming thresholds to avoid disruption or delay of ongoing construction contracts.

4.3.8. MAJCOMs and bases:

- Include documentation of the environmental exclusion in the project file.
- Provide HQ USAF/CEH with an after-the-fact notice that gives information about work scope, cost break-out, and other pertinent environmental remediation work details.
- Submit notices at the end of March and September each year to HQ USAF/CEH.

4.3.9. SAF/MII submits after-the-fact notices to the Congress semiannually.

4.4. Schedule. MAJCOMs and bases prevent any family housing project from falling 5 percent or more behind approved schedule.

4.5. Prototype Units. The base constructs a prototype unit for each type of housing facility in the project to aid construction inspection and acceptance.

4.6. Inspection Policy. Each family housing construction project, with a contract cost of \$1,000,000 or more, must have at least one full-time inspector assigned. The inspector:

- Ensures a quality product is delivered on time and in accordance with the terms of the contract.
- May not accept any family housing units without a prefinal and final inspection.
- Must complete all punch list items before final acceptance.

4.7. Fiscal Closeout:

4.7.1. MAJCOMs closeout a project within 4 months after completion, regardless of any pending claims.

4.7.2. SAF/FMB and HQ USAF/CEH withdraw any surplus funds.

4.7.3. HQ USAF/CEH reopens the account for any project if a claim warrants funding.

4.8. Architect-Engineer Liability. MAJCOMs pursue architect-engineer liability for design deficiencies when they result from:

- Errors or omissions in design or construction.
- Failure to meet standards.
- Breaches in contracts that damage the Government.
- Additional contractor contract cost.

JAMES E. McCARTHY, Maj General, USAF
The Civil Engineer

Attachment 1

GLOSSARY OF REFERENCES AND TERMS

References

AFI 32-1032, *Planning and Programming of Real Property Maintenance Projects*
AFI 32-6001, *Housing Management*
AFI 32-6003, *General Officer Quarters*
AFI 32-6004, *Furnishings Management*
AFI 32-6005, *Unaccompanied Housing Management and Operations*
AFI 32-7001, *Environmental Budgeting*
AFI 32-7061, *Environmental Impact Analysis Process*
AFI 32-7062, *Base Comprehensive Planning*
AFI 32-7065, *Cultural Resources Management*
AFI 32-7080, *Pollution Prevention Program*
AFI 32-1021, *Planning and Programming of Facility Construction projects*
AFI 32-1022, *Planning and Programming of Nonappropriated Fund Facility Construction Projects*
AFI 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*
AFI 32-1024, *Standard Facility Requirements*
AFI 32-9004, *Disposal of Real Property*
AFI 65-501, *Economic Analysis and Program Evaluation for Resource Management*
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Title 10 U.S.C. 2825, *Improvements to Family Housing Units*, October 23, 1992

Title 10 U.S.C. 2826, *Limitations on Space by Pay Grade*, December 5, 1991

Title 10 U.S.C. 2827, *Relocation of Military Family Housing Units*, July 12, 1982

Title 10 U.S.C. 2828, *Leasing of Military Family Housing*, December 5, 1991

Title 10 U.S.C. 2833, *Family Housing Support*, December 3, 1985

Title 10 U.S.C. 2834, *Participation in Department of State Housing Pools*, November 5, 1990

Title 10 U.S.C. 2835, *Long-term Leasing of Military Family Housing to be Constructed*, December 5, 1991

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Terms

Change of Occupancy Work—Minor maintenance and repair work done on housing units when occupancy changes. Includes interior painting; repairing floors, walls, and ceiling finishes; and repairing electrical and plumbing fixtures. Doesn't include other maintenance or repair work, which may have been deferred until change of occupancy to avoid inconveniencing the occupants.

General Officer Quarters—A housing unit, including all grounds, walks, driveways, other paved areas, and structures designated for the exclusive use of general officers, their families or guests.

Historic Housing Facilities—Facilities currently on, or eligible for nomination to, the National Register of Historic Places; or facilities that figure significantly in state or local history.

Housing Area—An identifiable grouping of family housing facilities planned, developed, and maintained in a residential character.

Housing Community Plan—A long range planning and programming document, consistent with land use as defined in the base comprehensive plan, which maps out development of the entire housing area to incorporate whole-house and whole-neighborhood concepts, including:

- Developing elements of neighborhood vehicular and pedestrian circulation based on siting, density, landscaping, parking, playgrounds, recreation areas, and utilities.
- Reconfiguring floor layouts, if necessary, to make housing more functional, livable and accessible.
- Extending the life of a unit for another 25 years by adding, expanding, or converting space.

Housing (Dwelling) Unit—A single structure or part of a multiple-family building including:

- Carport, garage, driveway, or other associated parking.
- Patio.
- Privacy fence.
- Utility service lines.
- Other attached facilities.

Housing Market Analysis—A formalized method used to estimate current and projected housing deficits or surpluses at any given installation. Professionals trained in social sciences and familiar with principal data sources and analysis techniques conduct these analyses working as independent consultants. They justify the need for the Air Force to acquire or construct new family housing units, replace existing family housing units, or undertake whole-house or whole-neighborhood improvement projects.

Major Maintenance and Repair—Work necessary fix or replace systems and their components nearing the end of their useful lives. Bases generally contract out for this work. Work includes:

- Restoring or replacing components of facilities damaged by fire, storm, or other disaster.
- Restoring or replacing equipment (over 1 HP), utility systems or plants.
- Restoring or replacing structural members in their original locations, foundations, roofs, exterior structures or walls, interior partitions, electrical, plumbing, heating, ventilation and air conditioning, real property installed equipment.

- Any work where the cost of materials and labor exceed \$2500.
- Addition of insulation where either no insulation or inadequate insulation exists.
- Installation of carpet, vinyl wall coverings, and wall paneling in existing facilities (when the flooring requires repair).
- Complete painting of the exterior, landscaping, and planting of trees or shrubs.
- An upgrade to contemporary standards may be considered major maintenance and repair if:
- The work is consistent with projected facility life, utilization, and sound engineering practices.
- The upgrade would provide a better product and/or complete economically with the existing product. An engineering analysis will be performed.

Minor Maintenance and Repair—The day-to-day maintenance and repair work performed in response to service calls or urgent job orders accomplished by contract or in-house forces.

Net Floor Area—The floor space area (in square feet) inside the exterior walls and party walls of a structure, excluding:

- The floor area of an unfinished basement.
- An unfinished attic.
- A utility space.
- A garage or carport
- An open or insect-screened porch.
- A stairwell.
- Any space used exclusively for a solar energy system.

Non-dwelling Unit (Support Facilities)—Facilities directly associated with a housing area or facilities outside the housing area that solely support family housing. Examples include:

- Roads, common-use parking areas, and bus shelters.
- Playgrounds and walks.
- Utility systems.
- Family housing management offices and maintenance shops.

Program Amount—The total project cost, including construction, contingencies, supervision, inspection, and overhead.

Replacement Cost—The cost to replace an existing family housing unit built to authorized size and whole-house standards. MAJCOMs and bases estimate the unit cost together with the cost to replace supporting facilities using DoD Tri-Service Cost Model. Calculate unit cost per net square foot according to the DoD pricing guide, multiply this by authorized net square feet and adjust the total by area cost factor, project size, and unit size. For supporting facilities, calculate cost based on a specifically proposed site, using engineering cost estimates for:

- Site preparations.
- Road and pavement.

- Utilities.
- Landscaping.
- Recreation.
- Any other features such as demolition or environmental hazard remediation.

Security Improvements--Appropriations (3400 Funds - Base O&M)—Improvement work incorporating the latest Air Force Office of Special Investigation validated anti-terrorism features and physical security measures. These may include alarms, security lighting, physical barriers (fences), or safe rooms.

Statutory Space Limit—The limit on net floor areas based on numbers of bedrooms and rank. For maximum net floor areas, see paragraph 1.3.7.

Substandard Housing—Inadequate family housing designated as such, by the Congress in 1973 because of condition. Occupants in substandard housing forfeit only 75 percent of their basic allowance for quarters and variable housing allowances.

Surplus Housing—Housing no longer needed to support that base's family housing requirements as determined by the housing market analysis .